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ABSTRACT

Competency-based teacher education (CBTE) cannot be defended unless a systematic large-scale research effort is directed to discovering the linkage between patterns of teacher behavior and student change. A more immediate need, however, is the development of techniques that (a) permit assessment of skills trainees possess, and (b) provide training in areas where performance is inadequate. The Teacher Behavior Research Group and the Intern Teaching Program, both in the process of developing a CBTE compenent, collaborated in a research program focused on these areas. The two groups jointly created a paradigm which allowed causal inferences to be drawn about (a) the effectiveness of training procedures, and (b) observed relationships between criterion teacher behaviors and student achievement. Results of the study indicated several inherent problems in measuring microteaching studies of teacher behavior when student achievement was the dependent variable. These problems are: (a) lesson content must be unfamiliar yet interesting to students, and it must incorporate intended teacher behaviors; (b) objectives must be limited in scope, and clearly and precisely defined: and (c) teacher behaviors must be manipulated systematically in order to obtain accurate experimental data. (JS)

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METHODOLOGICAL PROBLEMS AND ISSUES

Precise figures on the number of teacher education programs currently attempting the transition to a competency-based approach are not available. Some idea of their number may be gained from the fact that approximately thirty states had by the time of this writing mandated such a change, either through legislative action or through the certifying power of the state education agency.

This symposium, like most such symposia, has more in common with a proposal than with the kind of reports found in textbooks -- that is, it asks more questions than it answers. In it we present what we have learned in a two-year collaborative research effort between the Teacher Behavior Research Group and the Intern Teaching Program at Temple University and attempt to point some directions for the future.

Two years ago, in an AERA symposium which I also organized, I outlined a design for a research and development approach to managing the transition to a competency-based teacher education program. This transition has at its foundation the idea that teachers should be trained to do those things that cause or facilitate educational growth in their students. No one, however, really knows as yet what these teacher behaviors (or performances, skills, or competencies) are. This lack of a firm knowledge base has been recognized and lamented by virtually everyone involved in or affected by the movement, for it represents a dilemma that must be resolved if competency-based teacher education is ever to become anything more than another educational fad.

There is a real need for a systematic, large-scale research effort aimed at discovering the linkage between patterns of teacher behavior and student change. Without such research, CBTE cannot hope to answer those critics who claim it is a mechanistic, simplistic approach that cannot hope to comprehend the essence of real teaching (cf. Broudy, 1972).

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The other side of the dilemma is the real and immediate need of teacher educators for ways to improve the teacher education process today. Many teacher educators, recognizing the problems inherent in traditional approaches to teacher education, have already begun to move their programs and courses toward a competency base. These educators, while they need data-based knowledge about the linkages between teacher behavior and student behavior, have a more real and immediate need for techniques to permit them to assess the skills their trainees possess and provide training in those skill areas where the trainees' performance is inadequate. 7

The resolution of this dilemma lies in a comprehensive research and development effort aimed at the production and validation of competency-based training and assessment modules. With such an approach, the development of assessment strategies and procedures so urgently needed by teacher educators becomes an integral part of a basic research program for specifying and validating teacher skills. 8

The addition of a research component to the development activities already taking place was not proposed on purely pragmatic grounds. In fact, the opposite is more the case; the two are so intimately related as to be virtually inseparable. The process of defining in behavioral terms the precise nature of teaching performance is part and parcel of the process of developing assessment procedures. An assessment procedure cannot be developed without a clear description of a skill, nor can testing the relationship of the skill to student outcomes be done unless one has first developed procedures for assessing both teacher performance and student achievement. Furthermore, the relationship between teacher behavior and student outcomes cannot ultimately be tested without simultaneous development of training modules for each teaching skill to be studied. 9

Competency-based teacher education rests on the assumption that a causal relationship exists between teacher behavior and student growth. This relationship cannot be examined at all without first defining and describing in behavioral terms the nature of the teaching performance to be studied, so that we can at least tell when the behavior has occurred -- in other words, we must at least be able to measure teacher behavior at a nominal or categorical level. In addition, we must be able to measure student outcomes in a reliable, objective manner. These measures sould include not only lower level cognitive objectives but also measures of higher level cognitive functioning, as well as affective or attitudinal measures. 10

These two steps -- the development of reliable and objective measures of teacher behavior and of student outcomes -- will allow us to examine the relationship between what the teacher does and what happens to the students. However, we will not know whether this relationship is a causal one until we have conducted experimental studies in which teacher behavior is manipulated and consequent changes in student growth are measured. But what the experimental psychologist calls an experimental manipulation is closely related to what the educator calls training. In both cases, the goal is the same: shaping teacher behavior in a specific way. Thus, procedures which the educational researcher uses to test hypotheses about the relationship between teacher behavior and student outcomes are tools that can readily be adopted by the teacher educator to help teachers acquire specific teaching skills. Teacher educators can, without disrupting their role as educators, make substantial contributions to educational research. 11

What I was suggesting two years ago was that the needs of the CBTE movement could best be met by a programmatic research and development effort aimed at the production of competency-based training and assessment techniques. Such a research and development program would provide a solid empirical base on which to rest the growth of the movement. On the one hand, it would provide empirical evidence on the linkage between patterns of teacher behavior and student growth; on the other, it would provide teacher educators with the training and assessment techniques they so urgently need. 12

Nor are these aspects independent, for the training and assessment techniques developed would meet with an unprecedented level of acceptance. They would be accepted not because of a publisher's promotional efforts or because of the developer's reputation; rather, they would be accepted because they work -- because they had demonstrated their effectiveness in training teachers in skills whose validity had been established in sound research. Such techniques would be accepted as the means through which competency-based education can fulfill its promise of improving education by improving the quality of the training received by prospective teachers, and by providing mechanisms for carrying out the formative evaluation and training of inservice teachers. 13

The research program which is the focus of this symposium was designed to implement the ideas outlined above. The faculty and staff of the Intern Teaching Program was beginning the process of transition to competency-based teacher education. In so doing, they sought an alternative to the developmental models which were being implemented in other teacher education programs across the country. Specifically, they wanted to proceed slowly and surely to develope both a firm knowledge base and training and assessment techniques based on them. 14

At that time (early in 1973), the Teacher Behavior Research Group was refining the research methodology that would be needed in the programmatic effort described above. In a series of studies directed by F. J. McDonald, microteaching had been adapted from its original training function to serve as a research and development assessment device. Operating procedures, including lesson topics and content suitable for the 20-minute microteaching format, student outcome measures, teacher and student rating forms, and videotape technology had been developed and refined in field research. We was ready to move on to apply these procedures in a full research program. 15

The collaboration of the two groups was a result of the meshing of their respective needs, skills, and interests. Both groups wanted to build a programmatic research and development effort aimed at the production and validation of competency-based teacher training and assessment techniques. The Intern Teaching Program had a faculty, staff, and students; the Teacher Behavior Research Group had a research staff and support. This project was the outcome of their collaboration. 16

The basic design of the research is quite simple (pre-post, control-experimental): 17

(1) All interns were pre-tested in a microteaching situation, which was videotaped or audiotaped for subsequent coding; 17a
(2) The intern population was divided into experimental and control groups; 17b
(3) Experimental group(s) receives and works through the experimental module, while the control group receives and works through an alternate, unrelated module; 17c
(4) All interns take a performance posttest in a microteaching format like the one used for the pre-test; 17d
(5) Student achievement is measured in all microteaching sessions, and other student measures (student rating forms) are also used; 17e
(6) Intern teaching performance on criterion behaviors in the microteaching sessions is coded from the tapes, and performance is then compared across experimental and control groups; 17f
(7) Differences in teacher behavior are correlated with differences in student achievement. 17g

This paradigm should allow causal inferences to be drawn about the effectiveness of the training procedures (was the teacher behavior actually shaped as the trainer-experimenter intended?). In addition, and even more important, it also permits causal inferences to be drawn regarding any observed relationships between criterion teacher behaviors and student achievement. 18

I should like to be able to report that we have solved all the problems which have bedevilled teacher educators since the serpent taught Eve how to handle Adam. Unfortunately (as you may have guessed), such is not the case. As a matter of fact, I must admit to having felt some initial discouragement as I dug through much of our data. This is of course not the proper forum for any extensive discussion of research results; let it suffice, then, to say that not only have we had little luck in demonstrating any significant relationship between teacher behavior and student achievement, but we've also had difficulty finding any meaningful effects of training on teacher behavior. 19

Confronted with such depressingly uninformative findings, we did what any researcher would have done: we figured out why this was exactly what should have happened, and decided that more research was clearly needed. And it is. If we had it all to do over again, I personally have no doubt that we would once more dig in and work much as we have for the past two years. Our procedures might be different, for I think we've learned quite a bit -- but try again we would. 20

Just what, then, have we learned? 21

Basically, I think we've learned not to expect our methods to surpass their own limitations. We remain convinced of the value of the microteaching method as an essential part of a research and development approach to managing the changeover to a performance-based teacher education program. In this context, it is invaluable as a training technique and as a tool for gathering meaningful data on teacher behavior. But I think that to ask it to provide useful information on teacher behavior-student achievement linkages is to stretch the method perilously close to the breaking point. 22

There are several problems inherent in experimental microteaching studies of teacher behavior when student achievement is the dependent variable. 23

1. Lesson content: A microteaching lesson is a pretty unusual piece of educational business. If it is to be useful as a research device, its content must meet several qualifications: 23a

   a. It must be at least moderately interesting to the students. There is no use making teacher and student alike merely plod through an exercise in boredom and futility. Microteaching students typically know that their destiny is not likely to be heavily influenced by their performance in one twenty-minute microteaching session; if the topic is tedious, they will at best sit there looking politely attentive while silently counting away their twenty-minute sentences. (Any resemblance to students in "real" classrooms is purely coincidental and irrelevant, and no one with any finesse would mention it anyway). 23a1

b. It must be a topic with which the vast majority of the students are unfamiliar. If student achievement is to be the dependent variable, either we must have both a pre-test and a post-test to demonstrate growth, or else we must be able to defend the assumption that all the students started from zero, and any achievement above that level constitutes growth. Pre-tests are hard to handle in the context of a twenty-minute microteaching session, and anyway bring their own problems (e.g., sensitization of teachers and students to criterion items or knowledge); that leaves us trying to come up with lessons which deal with content to which students have not been exposed. This is harder than cynics might think, especially if the lessons are also supposed to be interesting. 23a2

c. It must be a topic which allows objectives toward which the teacher behaviors under study might logically be directed. Kids may not know much about the art of folding paper, and they may be fascinated by it (well, they might be); but if our teachers are supposed to be demonstrating their ability to lead group discussions...Something else is clearly needed. 23a3

2. Selection of objectives/measurement of student achievement: To be useful in a microteaching session, objectives must perforce be limited in scope, and they must be clearly and precisely defined. It is difficult (though probably not impossible) to reach a higher-order, relatively abstract objective within the context of a twenty-minute microteaching session; the job gets easier as the level of the objective drops. The measurement of student growth is subject to the same problem -- the more basic the objective, the easier it is to measure its attainment. 23b

If the microteaching format limits the teacher's ability to reach higher-order objectives, it puts even more severe constraints on those who would measure student growth. It is not easy to build an achievement test which: (1) is short enough to be administered as a part of our research design; (2) taps the objectives of the lesson, and only those objectives; (3) measures higher-order objectives (e.g., appreciation, inferential reasoning); (4) is reliable. 23c

3. Variations in teaching style: A true experimental study of relationships between specific teacher behaviors and specific kinds of student growth requires that we systematically manipulate the occurrence of teacher behavior X across randomly selected experimental and control groups. What we manipulated, however, was not the occurrence or non-occurrence of specific teacher behaviors, but rather the interns' ability to use these behaviors. We could manipulate the behaviors themselves by telling teachers to behave in specific ways, but this is inconsistent with both good training and good teaching. We believe that to constrain a teacher's behavior so much, for example, as to tell him to "ask 12 questions of type X during the lesson" is likely to cramp his style so much that the entire lesson may become strained and artificial. This would not only be bad as a training technique; it would also be bad research, simply because our experimental manipulations would have affected not only the independent variable (questionning behavior), but also an unspecifiable number of unknown variables which might also be expected to have a significant impact on the dependent variable. 23d

All of these problems are related to the use of the microteaching method in experimental studies in which student achievement is the dependent variable. Educationally, of course, this is ultimately inescapable. For us teacher educators, however, the dependent variable of immediate interest is teacher behavior. True, all the changes which we seek in the classroom behavior of student teachers have the growth of their students as the ultimate goal. But the question facing us is not the growth of our students' students; rather, it is the teaching behavior of those whom we train. What do they look like as teachers? Most important, can they do the things we said we'd train them to do? If they can, if they do, then we can proceed to study the relationship between their classroom behavior and the educational growth of their students. But if they cannot, our efforts have been wasted. 24

What it all boils down to -- what we're trying to tell you today -- is that we think it's worth the effort. The addition of a research component to the Intern Teaching Program's efforts to change over to a perfomance base has not been without problems, but we believe that the results justify the effort. The techniques which we have been using may not answer all the questions which we hoped they would; but they enable us to evaluate objectively the change in classroom behavior which our training techniques bring about in Temple's interns. Without these techniques, we could ask for testimonials from satisfied users, or we could argue our expert opinions against anyone else's; with them we have data, data which can be used to sharpen and refine both the performance of the interns and that of the program as a whole. 25